

CLAIMS

Therefore, having thus described the invention, at least the following is claimed:

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1. A local area network (LAN) to wide area network (WAN) communication system comprising:
 - a first computer;
 - a first communication device electrically coupled to the first computer configured to provide communications over a LAN, the first communication device in communication with a WAN via a first communication link;
 - a second computer; and
 - a second communication device electrically coupled to the second computer configured to provide communications over the LAN between the second and the first computers, wherein the first computer is configured to assign at least one virtual connection for each of the first and second computers to enable the first computer to route WAN data traffic across the LAN.
 2. The communication system of claim 1, wherein the first communication link comprises a xDSL communication link.
 3. The communication system of claim 1, wherein local area network (LAN) data signals are transmitted via frequencies greater than 1 MHz.
 4. The communication system of claim 1, wherein the first computer manages simultaneous data transfers between both itself and the second computer over the first communication link.
 5. The communication system of claim 1, wherein the at least one virtual connection is identified and managed via an asynchronous transfer mode (ATM) protocol.

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6. The communication system of claim 2, wherein local area network (LAN) data signals are transmitted via frequencies less than 1 MHz and wherein the frequencies fall between identified xDSL frequencies.

7. The communication system of claim 1, wherein each of the first and second computers are configured with a first and second communication device respectively, each of the first and second communication devices configured to enable local area network (LAN) communications between the first and second computers and wherein each of the first and second communication devices in cooperation with their respective computer is configured to assign at least one virtual connection for each of the first and second computers to enable either of the first and second computers to route wide area network (WAN) data traffic across the LAN.

8. The communication system of claim 7, wherein a master computer and a slave computer are selected from the first and second computers using one or more initialization algorithms.

9. The communication system of claim 8, wherein the slave computer is configured to reconfigure the local area network (LAN) upon detecting a master computer failure.

10. The communication system of claim 8, wherein the master computer applies a set of rules derived from a group of parameters consisting of access, traffic rates, and time-of-day when assigning the at least one virtual connection to each of the master and the slave computers.

11. The communication system of claim 1, wherein the first communication link comprises a community antenna television (CATV) network link.

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1 12. The communication system of claim 1, wherein the first communication
2 link comprises a wireless network link.

1 13. A method for managing bi-directional local area network (LAN) to wide
2 area network (WAN) data transfers in a communication system comprising:
3 using a master computer to assign at least one virtual connection to each computer
4 in communication with the LAN;
5 receiving a downstream signal (WAN to LAN) at a transceiver coupled to the
6 master computer;
7 forwarding the downstream signal to the master computer;
8 identifying at least one computer designated to receive the downstream signal;
9 forwarding the downstream signal to the at least one designated computer on the
10 LAN;
11 receiving an upstream signal (LAN to WAN) at the master computer; and
12 forwarding the upstream signal from the master computer to the transceiver.

1 14. The method of claim 13, wherein the transceiver is a xDSL compatible
2 transceiver.

1 15. The method of claim 13, wherein local area network (LAN) data signals
2 are transmitted via frequencies greater than 1 MHz.

1 16. The method of claim 13, wherein the master computer manages
2 simultaneous wide area network (WAN) data transfers between both itself and each other
3 computer in communication with the local area network (LAN) via the transceiver.

1 17. The method of claim 13, wherein the at least one virtual connection is
2 identified and managed via an asynchronous transfer mode (ATM) protocol.

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1 18. The method of claim 13, wherein local area network (LAN) data signals
2 are transmitted via frequencies less than 1 MHz and wherein the frequencies fall between
3 identified digital subscriber line (DSL) frequencies.

1 19. The method of claim 13, wherein each computers on the local area
2 network (LAN) is configured with a compatible communication device, each
3 communication device configured to enable LAN communications between LAN devices
4 and wherein each communication device in cooperation with its respective computer is
5 configured to assign at least one virtual connection for each LAN connected computer to
6 enable any LAN connected computer to route wide area network (WAN) data traffic
7 across the LAN.

1 20. The method of claim 19, wherein a master computer is selected from the
2 local area network (LAN) connected computers using at least one initialization algorithm.

1 21. The method of claim 20, wherein at least one slave computer is configured
2 to reconfigure the local area network (LAN) upon detecting a master computer failure.

1 22. The method of claim 20, wherein the master computer applies a set of
2 rules derived from a group of parameters consisting of access, traffic rates, and time-of-
3 day when assigning the at least one virtual connection to each of the local area network
4 (LAN) connected computers.

1 23. The method of claim 13, wherein the bi-directional local area network
2 (LAN) to wide area network (WAN) data transfers are completed via a community
3 antenna television (CATV) network link.

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1 24. The method of claim 13, wherein the bi-directional local area network
2 (LAN) to wide area network (WAN) data transfers are completed via a wireless network
3 link.

1 25. The method of claim 13, wherein the wide area network (WAN) is the
2 Internet.

1 26. The method of claim 13, wherein the wide area network (WAN) is a
2 private network.

1 27. The method of claim 13, wherein the master computer assigns at least one
2 asynchronous transfer mode virtual connection (ATM VC) to each computer in
3 communication with the local area network (LAN), further comprising:
4 notifying each computer on the LAN of the assigned ATM VC identifier; and
5 using each computer to selectively recognize and remove the downstream data
6 transfer designated from the network wherein downstream data transfers designated for
7 slave computers are not processed by the master computer.

1 28. A local area network (LAN) to wide area network (WAN) communication
2 system comprising:

3 means to complete a first communication link between a master computer and the
4 WAN;

5 means to communicate between the master computer and each remaining device
6 integrated on the LAN;

7 means to identify and forward LAN to WAN data transfers via the first
8 communication link; and

9 means to selectively receive WAN to LAN data transfers at each device integrated
10 on the LAN.

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1 29. The communication system of claim 28, wherein the means to complete a
2 first communication link is selected from the group consisting of a cable modem, a radio-
3 frequency (RF) compatible converter, a digital subscriber line modem, and a computer
4 modem.

1 30. The communication system of claim 28, wherein the means to
2 communicate between the master computer and each remaining device integrated on the
3 local area network (LAN) is accomplished with a data controller coupled to a respective
4 computer, the data controller configured to send and receive LAN data traffic, the data
5 controller further configured to translate LAN data traffic from a format suitable for
6 transmission over a LAN to a format suitable for transmission over a wide area network
7 (WAN), the data controller further configured to perform the reverse WAN to LAN data
8 traffic translation.

1 31. The communication system of claim 28, wherein the means to accomplish
2 both local area network (LAN) to wide area network (WAN) data transfers is
3 accomplished via an asynchronous transfer mode (ATM) protocol.

1 32. The communication system of claim 31, wherein the asynchronous
2 transfer mode (ATM) protocol uses an assigned virtual connection to accomplish data
3 transfers to local area network (LAN) connected devices.

1 33. The communication system of claim 31, wherein the asynchronous
2 transfer mode (ATM) protocol uses the combination of a terminal control protocol (TCP)
3 and an Internet protocol (IP) address to identify a destination device on the wide area
4 network (WAN).